

## PATENT ABSTRACTS OF JAPAN

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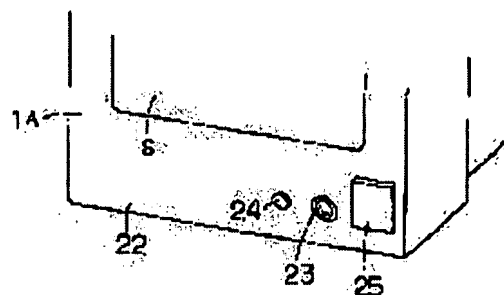
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(54) DISPLAY DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To require only few buttons for adjusting and to make operation of adjusting a screen easy even if adjustment items and contents of a screen are complex, in a display device having a OSD(On Screen Display) function.

SOLUTION: A track ball 23 and an execution button 24 are provided on a frame 22 of a display device 1A as an operation section for adjusting a screen. In a main menu of OSD, a cursor is moved to a desired sub-menu (adjustment item) by operating the track ball 23, and the sub-menu is selected by pressing the execution button 24. In the selected sub-menu, explanation of a function of the track ball 23 is displayed on a screen, and a prescribed screen adjustment can be performed by operating the device conforming to the explanation. Also, items corresponding to conventional buttons for adjusting such as 'Finish', 'Next menu', 'Reset' or the like are provided, by selecting them, desired processing can be performed without using an actual button.



## LEGAL STATUS

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates to the control unit which performs that screen adjustment about displays, such as CRT (Braun tube), liquid crystal display equipment, and plasma display equipment.

[0002]

[Description of the Prior Art] Recently, in indicating equipments, such as CRT, liquid crystal display equipment, and plasma display equipment, it has become common to perform the display position of a screen and adjustment of display grace using an OSD (on-screen display) function. Generally the conventional display with this OSD function is performing that screen adjustment actuation by switching by the carbon button mounted in the frame 2 of the front face of a display 1 like drawing 8 . In the indicating equipment 1 of illustration, it has the termination carbon button 3, the 1st adjustment carbon button 4 (two), the 2nd adjustment carbon button 5 (two), the activation carbon button 6, and various kinds of carbon buttons for adjustment of reset button 7 grade. In addition, the display 1 of illustration is the configuration that the contrast adjustment tongue 8 and the brightness adjustment tongue 9 perform adjustment of contrast and brightness, respectively. 10 is an electric power switch.

[0003] if the block diagram of an outline shows the configuration of the above-mentioned conventional indicating equipment 1 -- the passage of drawing 9 -- it is -- 11 -- for a display (the example of illustration is CRT), and 14, as for a deviation output circuit and 16, an oscillator circuit and 15 are [ the input section and 12 / a video amplifying circuit and 13 / CPU and 17 ] OSD (on-screen display) circuits. With the signal from the aforementioned carbon buttons 3, 4, 5, 6, and 7 for adjustment, the OSD circuit 17 is operated, the video amplifying circuit 12 amplifies the signal from the OSD circuit 17, and CPU16 displays the coordinating information of screen adjustment on the screen of a display 13.

[0004]

[Problem(s) to be Solved by the Invention] Adjustment actuation is becoming less easy [ for a user ] in the above-mentioned conventional indicating equipment 1 as the number of the carbon buttons for adjustment is increased, or it corresponds by giving two or more semantics to each carbon button for adjustment, respectively and an adjustment function is complicated, when it is going to realize various adjustment functions. If a concrete example explains, although the two 2nd adjustment carbon buttons 5 at the time of a main menu move cursor up and down and choose an adjustment item, when this carbon button 5 for adjustment is operated in the sub menu of "justification", it means that the location of a screen moves up and down, and means that set to the sub menu of "size adjustment", and the size of a screen expands and contracts perpendicularly, for example. Moreover, in the case of the carbon button 4 for adjustment, it does not function in a main menu, but it means that the location of a screen moves to right and left in the sub menu of "justification", and means that the size of a screen expands and contracts horizontally with the sub menu of "size adjustment." Thus, one carbon button for adjustment has different semantics in each of a main menu and each sub menu. For this reason, a user has to master the complicated function of each carbon button for adjustment, and is not simple for adjustment actuation as mentioned above. Moreover, since there are many carbon buttons for adjustment, the mounting space of these carbon buttons is needed, the frame 2 of a display 1 becomes large and there is also a problem that a display large-sized-izes.

[0005] This invention was made in order to cancel the above-mentioned conventional fault, even if it prepares various screen adjustment functions, it does not need many carbon buttons for adjustment, but it aims at screen

adjustment actuation applying the display which can realize \*\*-ization of a frame because the mounting space of the components for screen adjustment ends few easily.

[0006]

[Means for Solving the Problem] While this invention which solves the above-mentioned technical problem displays the coordinating information for screen adjustment actuation on a screen with the signal from a screen adjustment control unit In the display equipped with an on-screen display means to operate said screen adjustment control unit according to this displayed coordinating information, and to adjust a screen It is characterized by preparing the activation carbon button for deciding a pointing device and the matter adjusted or chosen with this pointing device on the frame surrounding a screen as said screen adjustment control unit.

[0007] Claim 2 is characterized by said pointing device being a trackball.

[0008] Claim 3 is characterized by said pointing device being a stick type pointing device.

[0009]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to drawing 1 - drawing 7 . The perspective view in which drawing 1 shows the important section of the front face of indicating-equipment 1A of one example of this invention, and drawing 2 are the block block diagrams of the outline of this indicating-equipment 1A. Like illustration, the point equipped with the input section 11, the video amplifying circuit 12, a display (the thing of illustration is CRT) 13, the oscillator circuit 14, the deviation output circuit 15, CPU16, and the OSD (on-screen display) circuit 17 is the same as the conventional display 1 shown in drawing 9 . Moreover, an electric power switch 25 is the same as the former. However, the contents of CPU16 and the OSD circuit 17 differ.

[0010] In this display 1A, the activation carbon button 24 which decides the contents which formed the trackball 23 which is a pointing device in the transverse plane of the frame 22 surrounding a screen as a screen adjustment control unit which adjusts a screen, and were adjusted or chosen by actuation of this trackball 23 was formed, and this trackball 23 and the activation carbon button 24 are connected to CPU16.

[0011] The point of the screen adjustment actuation in the above-mentioned display 1A is explained. If the activation carbon button 24 is pushed or a trackball 23 is moved after setting an electric power switch 25 to ON, it will go into OSD mode and a main menu will be displayed on Screen S. As the contents of the main menu are shown in drawing 3 , the title of the OSD menu and eight selections are displayed. 1 is termination, 2 is degree menu, and 2-8 are the adjustment items of a screen. The adjustment item of the example of illustration is taken as justification, size adjustment, brightness adjustment, contrast adjustment, fine tuning A (whole), fine tuning B (part), and fine tuning C (equal). In addition, an adjustment item can be set as arbitration, such as for example, distortion amendment and a brilliance control, besides these.

[0012] If a trackball 23 is rotated in the vertical direction by the fingertip here, cursor will move up and down (the component of a rotational longitudinal direction is unrelated). If it is made to move to the item of the request of cursor of each aforementioned items 1-8 of a main menu by actuation (vertical rotation) of a trackball 23 and the activation carbon button 24 is pushed, in other than the item of "termination [ 1. ]", it will become the sub menu screen of each selected adjustment item.

[0013] Supposing it chooses "2. justification" in the above, Screen S will serve as a sub menu of justification as shown in drawing 4 . here, when the vertical direction or a longitudinal direction is made to rotate a trackball 23, there is a screen up and down -- it is -- it moves to right and left. If the activation carbon button 24 is pushed in a desired location, the screen location will be decided. In addition, if "4. reset" is chosen and the activation carbon button 24 is pushed, current adjustment will be canceled and a screen location will return to a standards setting value.

[0014] If "3. degree menu" was chosen in the sub menu of justification of drawing 4 , Screen S serves as a sub menu of size adjustment as shown in drawing 5 . Carry out vertical rotation of the trackball 23, and a screen size is made to expand or reduce perpendicularly, or right-and-left rotation of the trackball 23 is carried out, and a screen size is made to expand or reduce horizontally here. After desired size is obtained, \*\* which pushes the activation carbon button 24, and its screen size are decided.

[0015] If "3. degree menu" was chosen in the sub menu of size adjustment of drawing 5 , a screen serves as a sub menu of brightness adjustment as shown in drawing 6 . In the sub menu of this brightness adjustment, the scroll bar 30 is displayed on Screen S bottom. Here, if right and left are made to rotate a trackball 23, a scroll bar 30 will fluctuate and a screen will become bright or dark. In addition, the component of the vertical direction of rotation of a trackball 3 in this sub menu is unrelated. After desired brightness is obtained, \*\* which

pushes the activation carbon button 24, and its brightness are decided.

[0016] Although omitted about other sub menus, the contents according to each sub menu are displayed, and it can adjust according to the contents of a display.

[0017] Display 1B of other examples of this invention is shown in drawing 7 . This indicating-equipment 1B is replaced with the above-mentioned trackball 23 as a pointing device, and forms the pointing stick (stick type pointing device) 31 in the transverse plane of a frame 22. Other parts are the same in said example. As an arrow head on all sides shows to drawing 7 , this pointing stick 31 can incline in the direction of the arbitration of the circumference of that medial axis, and cursor moves it in that leaning direction. Adjustment of the screen by this pointing stick 31 is the same as that of the case of the above-mentioned trackball 23.

[0018] In addition, although the indicating equipment of the example of illustration is CRT, naturally it is applicable also to indicating equipments, such as a liquid crystal display unit and plasma display equipment.

[0019]

[Effect of the Invention] According to this invention, even if the adjustment item and the contents of the screen are complicated, it is not necessary to prepare many carbon buttons for adjustment like before. Adjustment actuation is possible only with a pointing device and an activation carbon button only, and a complicated thing [ a thing ] two or more semantics is moreover given like before to each carbon button for adjustment, respectively is unnecessary. Since the matter required for screen adjustment actuation was always displayed on the screen, the user did not need to master the complicated actuation point and screen adjustment actuation became remarkably easy.

[0020] The need of many carbon buttons for adjustment is not carried out as mentioned above, but since a pointing device and only an activation carbon button are required, the mounting space of components can end few, \*\*-ization of a frame can be realized, and unnecessary large-sized-ization of a display can be avoided.

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[Translation done.]

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the perspective view of the important section of the display of one example of this invention.

[Drawing 2] It is the block block diagram of the indicating equipment of drawing 1.

[Drawing 3] It is drawing showing the main menu screen at the time of the screen adjustment in the display of drawing 1.

[Drawing 4] It is drawing showing the sub menu screen of the justification at the time of the screen adjustment in the indicating equipment of drawing 1.

[Drawing 5] It is drawing showing the sub menu screen of the size adjustment at the time of the screen adjustment in the indicating equipment of drawing 1.

[Drawing 6] It is drawing showing the sub menu screen of the brightness adjustment at the time of the screen adjustment in the indicating equipment of drawing 1.

[Drawing 7] It is the perspective view of the important section of the display of other examples of this invention.

[Drawing 8] It is the front view of the important section of the conventional display.

[Drawing 9] It is the block block diagram of the outline of the indicating equipment of drawing 8.

### [Description of Notations]

1A, 1B Display

11 Input

12 Video Amplifying Circuit

13 CRT

14 Oscillator Circuit

15 Deviation Output Circuit

16 CPU

17 OSD (On-Screen Display) Circuit

22 Frame

23 Trackball (Pointing Device)

24 Activation Carbon Button

25 Electric Power Switch

31 Pointing Stick (Pointing Device)

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[Translation done.]

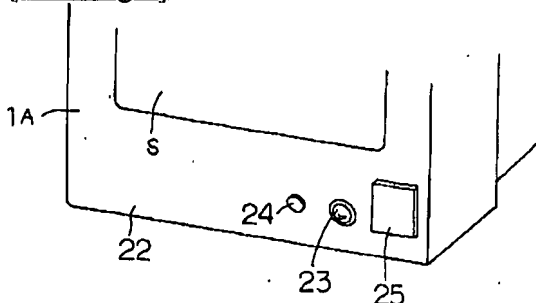
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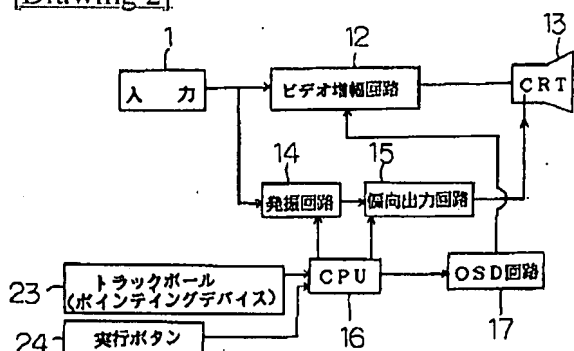
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## DRAWINGS

[Drawing 1]

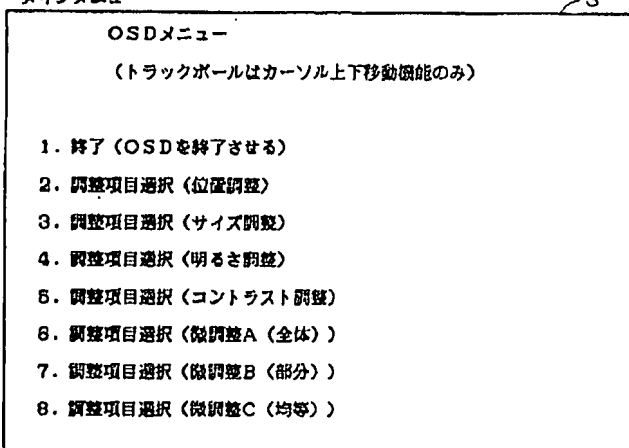


[Drawing 2]



[Drawing 3]

メインメニュー



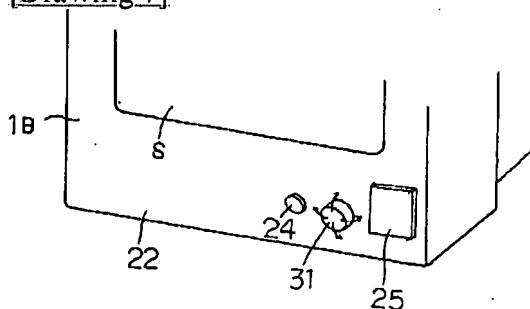
[Drawing 4]

## 位置調整のサブメニュー

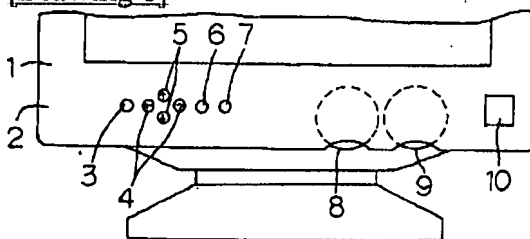
## 位置調整

1. トラックボール機能  
上下回転 (画面位置が上下移動)  
左右回転 (画面位置が左右移動)
2. 終了 (メインメニューに戻る)
3. 次メニュー
4. リセット (標準設定値に戻る)

[Drawing 7]



[Drawing 8]



[Drawing 5]

## サイズ調整のサブメニュー

## サイズ調整

1. トラックボール機能  
上下回転 (画面サイズが垂直方向に拡大 (上) または縮小 (下))  
左右回転 (画面サイズが水平方向に拡大 (右) または縮小 (左))
2. 終了 (メインメニューに戻る)
3. 次メニュー
4. リセット (標準設定値に戻る)

[Drawing 6]

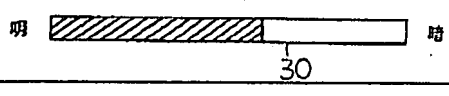


明るさ調整のサブメニュー

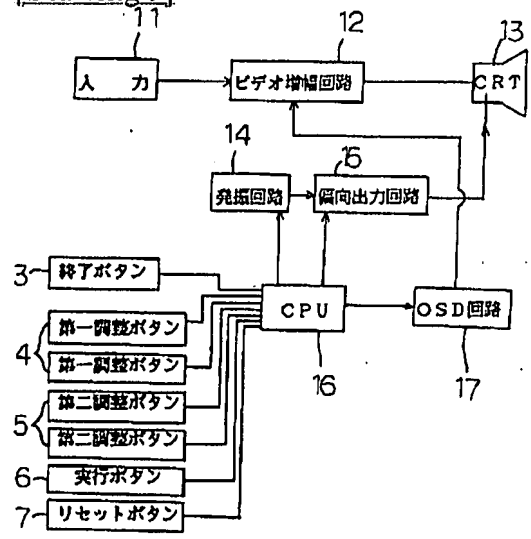
16

明るさ調整

1. トラックボール機能  
上下回転 (機能しない)  
左右回転 (スクロールバー: 明るさ増大 (右) または減少 (左))
2. 終了 (メインメニューに戻る)
3. 次メニュー
4. リセット (標準設定値に戻る)



[Drawing 9]



[Translation done.]